SUMMARY AND CONCLUSIONS

The present study investigates the nature of the so-called visual mental image. Specifically it is examined to what degree there is a correspondence between the structures of visual images and visual percepts.

After introducing the general problem in Chapter 1 the functional significance of mental imagery in learning and memory processes is treated in Chapter 2. The chapter contains a review of the core empirical results on two of the issues of most concern in present-day research on the significance of imagery in cognitive processes. The first issue is what the effects are of stimulus imageability (*I* - roughly equivalent to stimulus position on the abstractness-concreteness dimension) and how these compare with the effects of other stimulus attributes. Results from recognition, free recall, serial memorization and paired-associate memorization studies indicate that *I* is a variable which is more potent than such long-established variables like *m*, frequency or familiarity. The second issue is what the effects of an imagery mnemonic are on memory performance and how these compare with the effects of other mnemonic strategies. It is concluded that imagery is a strong mnemonic, at least for concrete material.

Chapter 3 deals with the necessity to introduce imagery as an explanatory construct to account for findings like those reviewed in Chapter 2. Pylyshyn's (1973) critique on the appropriateness of the imagery concept is discussed. A format for the visual image is then introduced. The most important distinction to be made when talking about the structure of the visual image, according to this format, is between its spatial and nonspatial (sensory) features. This reflects the fundamental distinction in visual perception between *where* an organism sees something and *what* it sees. A representation in which these two types of features are interwoven is developed and indicated as the feature network format.

Chapter 4 subsequently examines the experimental methods by means of which properties of the feature network could most appropriately be tested. It is concluded that introspection, protocol analysis, the analysis of eidetic imagery and the analysis of the occurrence of sensory after-images and illusions in visual imagery are sub-optimal to this purpose. Methods that appear to bear more promises in them are the analysis of interference between images and percepts (selective, i.e., modality-specific interference paradigms) and the analysis of the role of eye movements in visual imagery.

In Chapter 5 the description is contained of five experiments which have made use of a selective interference paradigm. In all of them an opportunity was created for a conflict between a relatively nonspatial imagery task and a similar perceptual interfering task. Selective interference was obtained in the acquisition stage of two paired-associate experiments as well as in a free recall experiment (Experiment I, II and III). In a subsequent experiment (IV) selective interference was found to occur also at the retrieval stage of memorization. Experiment V showed that a spatial interfering task had no selective degrading effect on memory performance for the nonspatial imagery task, indicating the independence of spatial and nonspatial features as specified by the feature network format.

Chapter VI concentrates on the spatial features of visual imagery. Most crucial for the theoretical ideas presented earlier is Experiment VI, in which it is shown that a spatial visual task interferes selectively with spatial imagery, while the effect of nonspatial visual stimulation works relatively more on nonspatial imagery.

Experiment VII demonstrates a small effect of the opportunity to make eye movements on the ease of generating visual images to isolated static nouns. The effect was considerably larger in Experiment VIII, in which *Ss* had to imagine *moving* objects. It is concluded that the spatial features of images of a pattern having a definite spatial component are at least partly laid down in the form of motor memory traces.